

Abstract

A partially-open power cogeneration system and apparatus means wherein the system's working motive fluid replaces the predominant air-derived nitrogen working motive fluid contained in a conventional gas turbine cycle as applied within a conventional cogeneration system. The working motive fluid comprises a mixture of predominantly carbon dioxide and water vapor in a Mol percent ratio identical to that of the same molecular components Mol percentages as generated from the oxy-fuel combustion of the hydrocarbon fuel used. The described power cogeneration system can provide a 95 to 100% percent reduction of fugitive nitrogen oxide and carbon monoxide mass flow emissions as emitted by present art gas turbines on a rated shaft-horsepower basis, and can further develop cogeneration power plant thermal efficiencies exceeding 115% at greatly reduced system operating pressures.